ERIC Document Resume	See Instruction Sheet	DATE OF RESUME	DATE RECEIVED

A. PUBLICATION DATA

1. ERIC NUMBER	2. ORIGINATOR CONTROL NO(S).	3. IDENTIFICATION NO.
ED002421	N.A.	2202

DO NOT WRITE IN SPACE BELOW

4. AUTHOR(S): McTavish, C. L.

5. TITLE OF DOCUMENT ABSTRACTED:
Effect of Repetitive Film Showings on Learning

6. PUBLICATION TITLE: N.A.

7. EDITOR(S): N.A.

8. PLACE OF ORIGIN
ORG. The Pennsylvania State College Instructional Film Research Program
CITY, STATE Philadelphia, Penna
TELE. EXT.
INST/LOC CODE

9. PUBLISHER OR SOURCE The Pennsylvania State College, Instructional Film Research Program, Philadelphia, Pennsylvania

10. VOL.	11. PAGES	12. MO./YR.	13. TOTAL PP.
N.A.	N.A.	11/49	8

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TYPE OF REPORT
PROPOSAL ☐
IN-PROGRESS ☐
FINAL ☒
FOLLOW-UP ☐

OTHER ERIC REFERENCES:

ERIC SATELLITE CODE

B. INDEXING DATA

14. SUBJECT AREA

15. TYPE OF ENDEAVOR Report

16. INDEXING TERMS (6-12)

teaching aids	learning			
audiovidual aids	teaching methods			
time factors	films			
	repetitive film showings			

17. ABSTRACT (MAX. 250 WORDS)

A determination of the increment in learning attributable solely to one, two, and three repetitions of a film over and above a single showing was investigated.

The subjects were 319 college freshmen who were divided into four groups and who were shown four general science films. Each group saw one of the films once, a second film twice, a third film three times, and a fourth film four times. No two groups saw the same film the same number of times. Multiple-choice objective tests were prepared for each film and were given during the next class period after the film was shown.

The difference between the pretest and post-test scores was highly significant in each case, indicating that every group learned from every film. Seeing a film two times resulted in a substantial increase in learning. The third showing did not significantly increase the learning effected by two showings. Four showings brought about a smaller gain, and in two cases a slight decrease, over three showings. The optimum number for the type of factual films used in the study was two showings.

ERIC No.

18. SOURCE OF ABSTRACT

C. FUNDING DATA

19. SUPPORTING ORGANIZATION	20. DIVISION OR DEPT.	21. CONTRACT NO. / PROJECT NO.
	22. TOTAL COST OF PROJECT	
	23. DURATION OF PROJECT	U.S. Department of Health, Education, and Welfare Office of Education

ERIC Form 1

TECHNICAL REPORT - SDC 269-7-12

EFFECT OF REPETITIVE FILM SHOWINGS ON LEARNING

(Rapid Mass Learning)

The Pennsylvania State College
Instructional Film Research Program
November 1949

Project Designation NR-781-005
Contract Nonr-269, T.O. VII
SDC Human Engineering Project 20-E-4

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SUMMARY

Statement of the Problem

The purpose of this study was to determine the increment in learning that may be attributed solely to one, two and three repetitions of a film, over and above a single showing.

Experimental Procedure

The Films: Four general science films were shown to each of four groups of college students in such a way that each group saw one of the films once, a second film twice, a third film three times and a fourth film four times. No two groups saw the same film the same number of times.

The Tests: Multiple-choice objective tests were prepared for each film.

The Population: The experimental population included 319 college freshmen enrolled in 12 sections of science survey classes.

Test Procedure: Two weeks before the scheduled film showings the experimental groups were given a pretest covering all four films. This pretest was a scrambled form of the individual film tests. The films were then shown, rotating the films and groups as indicated above. The groups met three times each week on alternate days. A film was shown the required number of times in one class period and the test on that film was given at the next period.

Results

In every case the difference between the pretest and post-test scores was highly significant, indicating that every group learned from each film. Analysis of the learning gains attributable to each additional showing of the films indicated that the first repetition (i.e. two showings) resulted in substantial increments in learning. Three showings failed to add materially or significantly to the learning effected by two showings. Four showings resulted in an even smaller increment, or in two cases a slight decrement, over three showings.

Conclusion

For factual films of the type used in this study showing them twice resulted in appreciably more learning, showings after the first two contributed little more to learning, and the drop-off was very rapid.

EFFECT OF REPETITIVE FILM PRESENTATIONS ON LEARNING

C. L. McTavish

STATEMENT OF THE PROBLEM

The repetitive showing of instructional films to increase learning is an accepted, although relatively untested, film utilization procedure. The purpose of this research study is to determine the increment in learning that may be attributed solely to one, two, and three repetitions of the film, over and above a single presentation.

EXPERIMENTAL DESIGN AND PROCEDURES

Four films were shown to each of four groups of college students in such a way that each group saw one of the films once, a second film twice, a third film three times, and a fourth film four times. No two groups saw the same film the same number of times.

The films. The films used were: Atomic Energy, Electrochemistry, Colloids, and Food and Nutrition. All were 10 minute, sound, black-and-white, Encyclopaedia Britannica releases.

Five-choice objective-type tests were prepared for each film. [1]

The population. The experimental population included 319 college freshman enrolled in 12 sections of the science survey classes at the State Teachers College, West Chester, Pennsylvania. Of the 319, 99 were men and 220 women.

Procedures. Two weeks before the scheduled film showings, the members of the experimental population were given a pretest covering all four films. This pretest was a scrambled form of the basic film tests.

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[1] The reliability of the tests, using the Kuder-Richardson formula 14 for estimating test reliability, were: Atomic Energy, .80; Colloids, .92; Electrochemistry, .88; Food and Nutrition, .87.

For the film showings, the 12 sections were divided into four groups. Each group was shown the four films, from one to four times according to the schedule in Table 1.

TABLE 1

NUMBER OF PRESENTATIONS OF EACH FILM TO EXPERIMENTAL GROUPS

Group	Film			
	Atomic Energy	Colloids	Electro-chemistry	Food and Nutrition
I	1	2	3	4
II	2	3	4	1
III	3	4	1	2
IV	4	1	2	3

The classes participating all met three times a week, on alternate days (Monday, Wednesday, and Friday, or Tuesday, Thursday, and Saturday). In each instance, the film was shown the required number of times in one class period, and the test on that film was administered at the next class period.

RESULTS

The mean pretest and post-test scores, the difference between these scores (measure of amount learned) and the increments resulting from repeated showings of each of the four films, are given in Table 2.

In every case, the difference between the pretest and post-test scores was significant at far beyond the 0.1 percent level of confidence, indicating that every group learned from each film.

Analysis of the learning gains attributable to repetition of a film, however, showed that the first repetition only (two showings) resulted in an increase in scores greater than might be attributed to chance alone. For the films "Colloids", "Electrochemistry," and "Food and Nutrition", one repetition

TABLE 2

PRETEST AND POST-TEST MEANS AND MEAN GAINS, FOR EACH FILM, BY NUMBER OF SHOWINGS

Number of Showings	Pretest Mean	Post-test Mean	Post-test Pretest Difference Mean	Post-test Pretest Difference S. D.	Mean Gains: Increment from Added Showings Mean	Mean Gains: Increment from Added Showings S. D.
		A. ATOMIC ENERGY				
1	28.4	42.2	13.8	8.35		
					2.1	1.25
2	28.8	44.7	15.9	7.18		
					2.1	1.15
3	29.6	47.6	18.0	7.38		
					-1.5	1.08
4	33.4	49.9	16.5	6.21		
		B. COLLOIDS				
1	25.0	32.4	7.4	4.63		
					1.6*	.58
2	23.0	32.0	9.0	4.87		
					0.5	.59
3	24.2	33.7	9.5	4.74		
					0.3	.58
4	35.4	35.2	9.8	4.88		
		C. ELECTROCHEMISTRY				
1	30.5	36.7	6.2	4.61		
					2.3*	.67
2	30.0	38.5	8.5	5.55		
					0.4	.70
3	28.3	37.2	8.9	4.79		
					-0.8	.68
4	28.7	36.8	8.1	5.43		
		D. FOOD AND NUTRITION				
1	40.1	45.1	5.0	4.98		
					5.5*	.62
2	38.4	48.9	10.5	4.98		
					0.2	.66
3	37.1	47.8	10.7	5.20		
					0.3	.76
4	35.4	46.4	11.0	5.66		

* Significant at the 0.1% level of confidence.

resulted in gains significant at the 0.1 percent level of confidence. For "Atomic Energy", the gain was not statistically significant. Three showings failed to add materially or significantly to learning effected by two showings. Four showings resulted in even a smaller increment, or, in two cases, a small decrement (i.e., the mean scores after four showings was lower, for the groups seeing "Atomic Energy" and "Electrochemistry" than the mean scores for the groups seeing the films fewer times.) Although for the film "Atomic Energy" the first two repetitions resulted in positive increments that were not significant, three showings were significantly better than one for this particular film.

For all the films, three and four showings yield significantly greater learning than one showing, but not significantly greater learning than two showings.

Figure 1 presents graphically for each film the increments in learning which are attributable to each additional showing after the first. It will be noted that there was a substantial increase in learning from all four films on the second showing. There was a slight increment on the third showing, while the fourth showing resulted in a small increment for two of the films, and a decrement for the other two.

INCREMENTS IN LEARNING ATTRIBUTABLE TO REPEATED SHOWINGS (LEARNING FROM FIRST SHOWING =100)

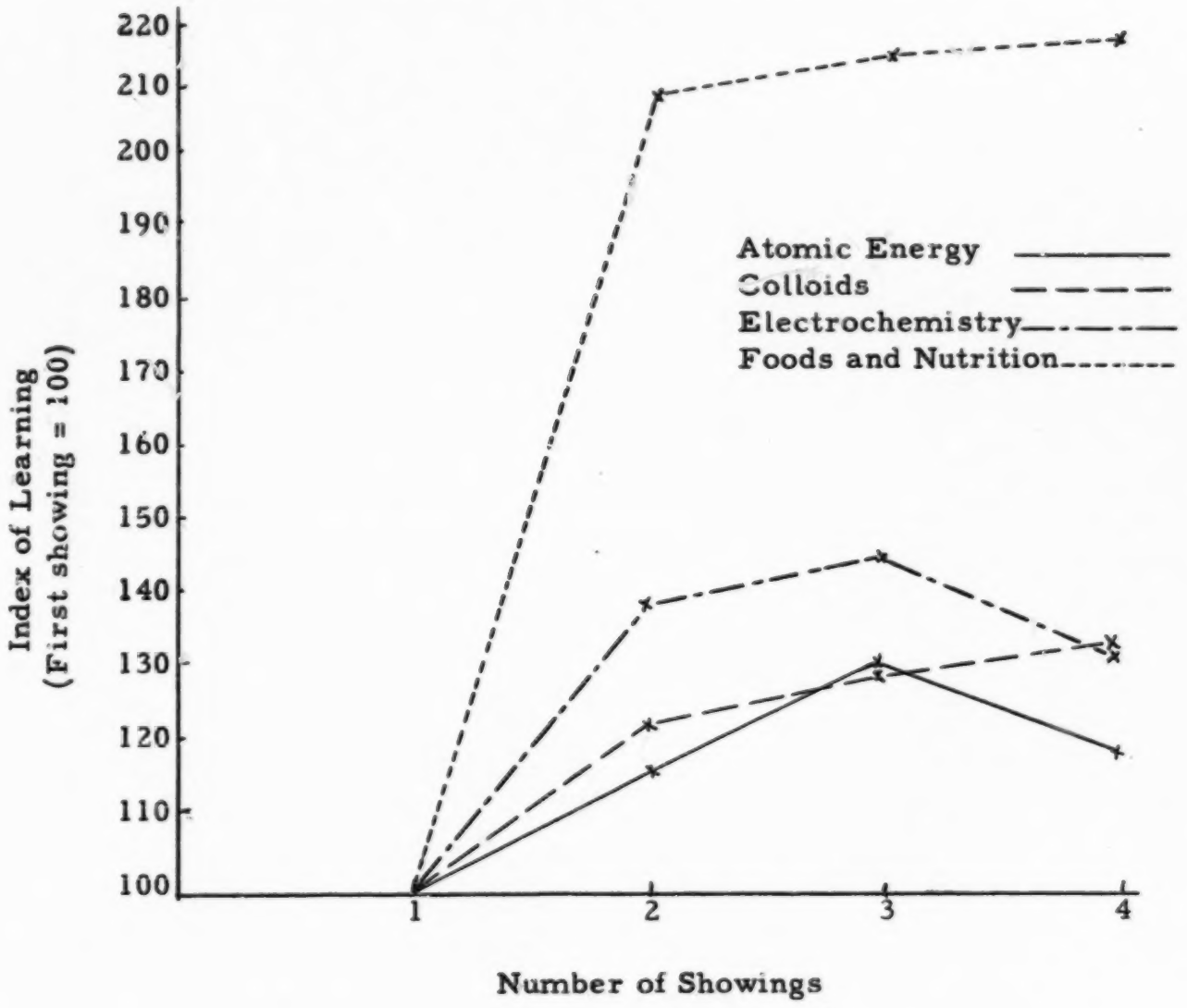

FIGURE 1

CONCLUSIONS

1. These films were effective in teaching at least some of the tested information. After one showing only, there was, for each film, a significant gain over previous knowledge. The pretest-posttest gains were significant at the 0.1 percent level of confidence.

2. Repeating the films resulted in greater learning. With every repetition there was generally a positive increment in the pretest-posttest gain. However, the contribution made by repetition of showings fell off rapidly after the first repetition. Furthermore, only the increment attributable to the first repetition is statistically significant.

The conclusion may be drawn that, for factual films of the kind used in this study, showing them twice results in appreciably more learning; showings after the first two contribute little more to learning, and the drop-off is very rapid.